

...section of the four modules constitutes the radio broadcast monitoring system. Below is the flow-

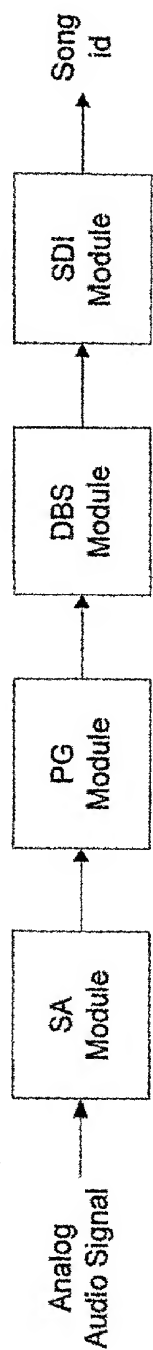
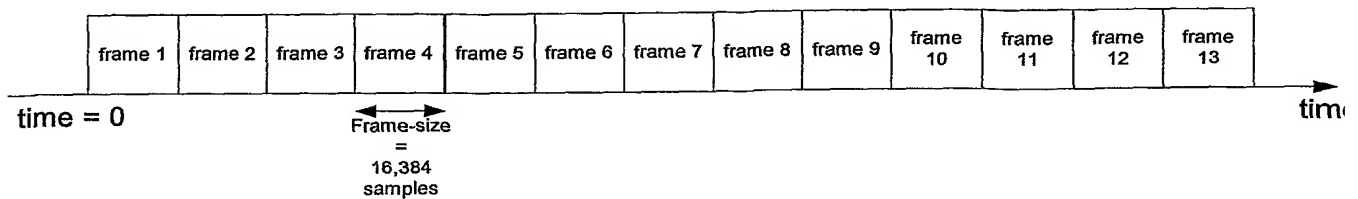
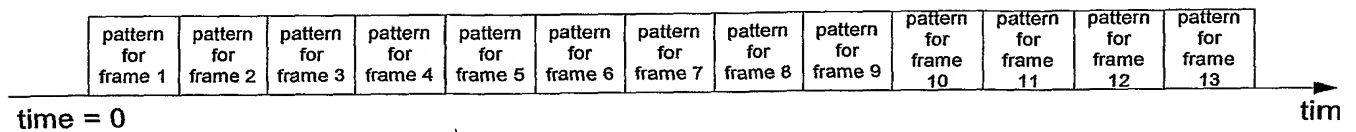


Figure 2 An illustration of the flow of the algorithm from a frame of audio to its result after detection.

Broadcasted signal is divided into time frames, each frame contains 16,384 samples

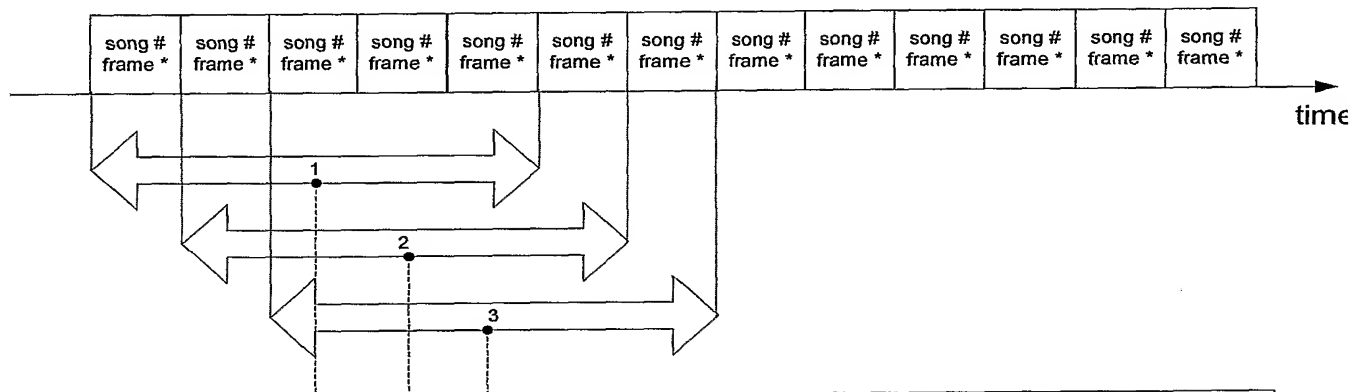


The pattern (vector) of each frame is computed with the PG Module



Each pattern is sent to the DBS Module.

The DBS Module returns either NOMATCH, or, the matched song # and the matched frame \* in the song #



The double-headed arrow represents how the SDI functions.

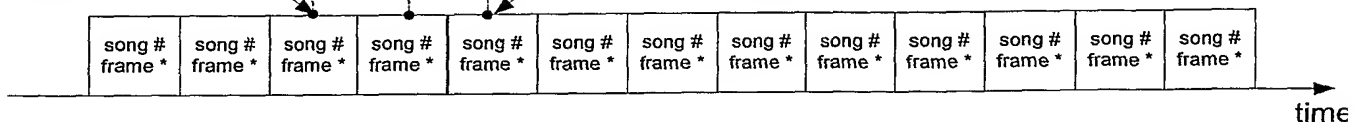
The module reads every 10 frames of song #, then exercise the collateral filtering technique - to detect if a song is presence:

*If there is no majority winner, no song is detected, issue song# = 0.*

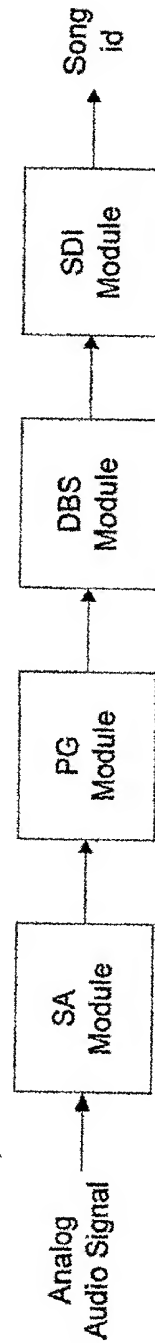
*If there is a majority winner, issue song# = winner song#.*

The winner song # (and frame #) of the five frames encompassed by the arrow 1

The winner song # (and frame #) of the five frames encompassed by the arrow 3

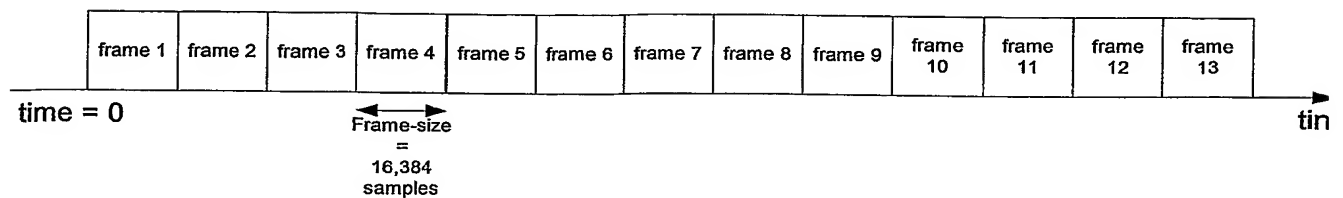


connection of the four modules constitutes the radio broadcast monitoring system. Below is the flow-

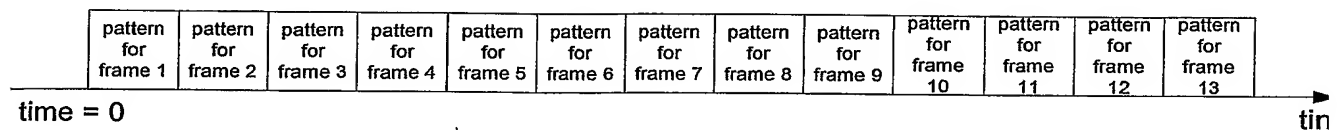


**Figure 2** An illustration of the flow of the algorithm from a frame of audio to its result after detection.

broadcasted signal is divided into time frames, each frame contains 16,384 samples

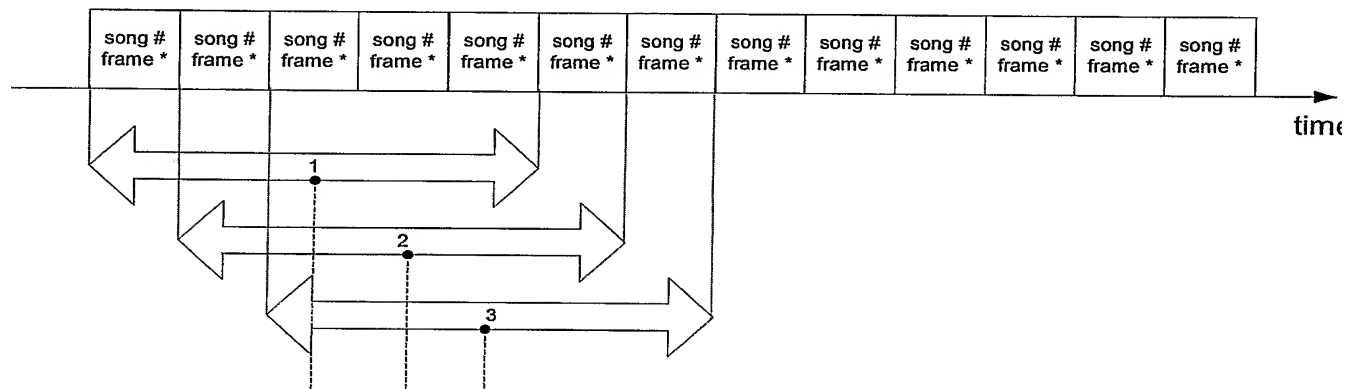


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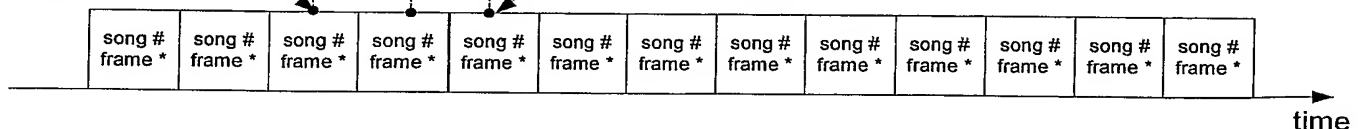
The module reads every 10 frames of song #, then exercise the collateral filtering technique - to detect if a song is presence:

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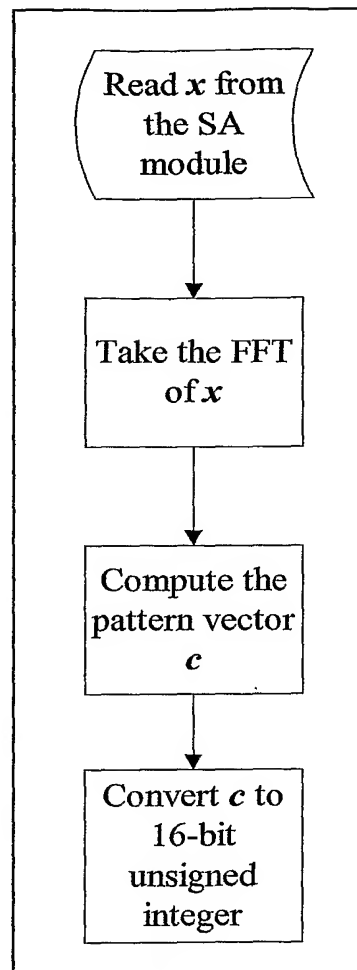
The winner song # (and frame #) of the five frames encompassed by the arrow 1

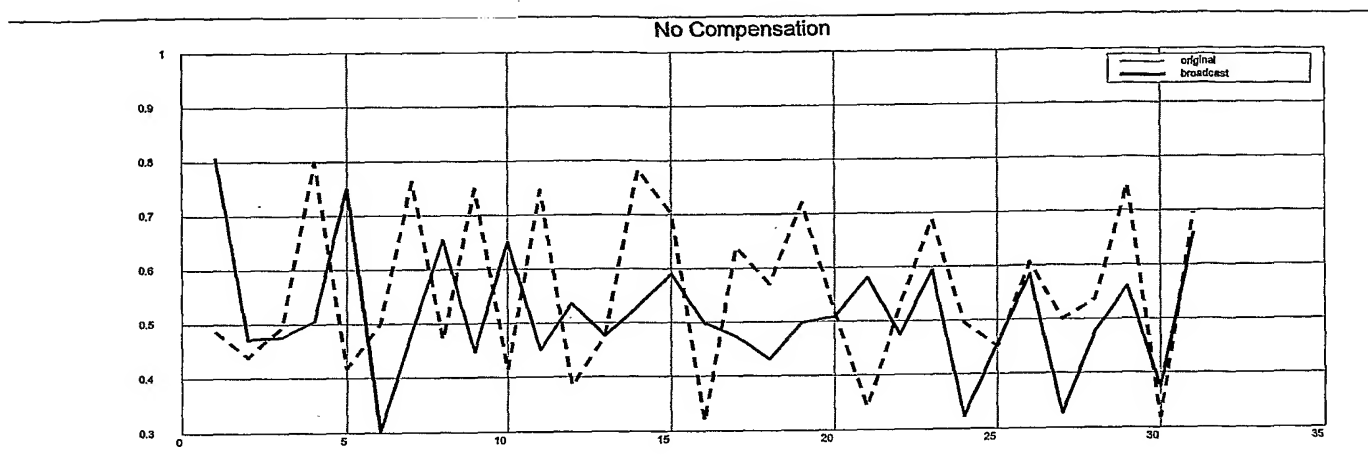
The winner song # (and frame #) of the five frames encompassed by the arrow 3



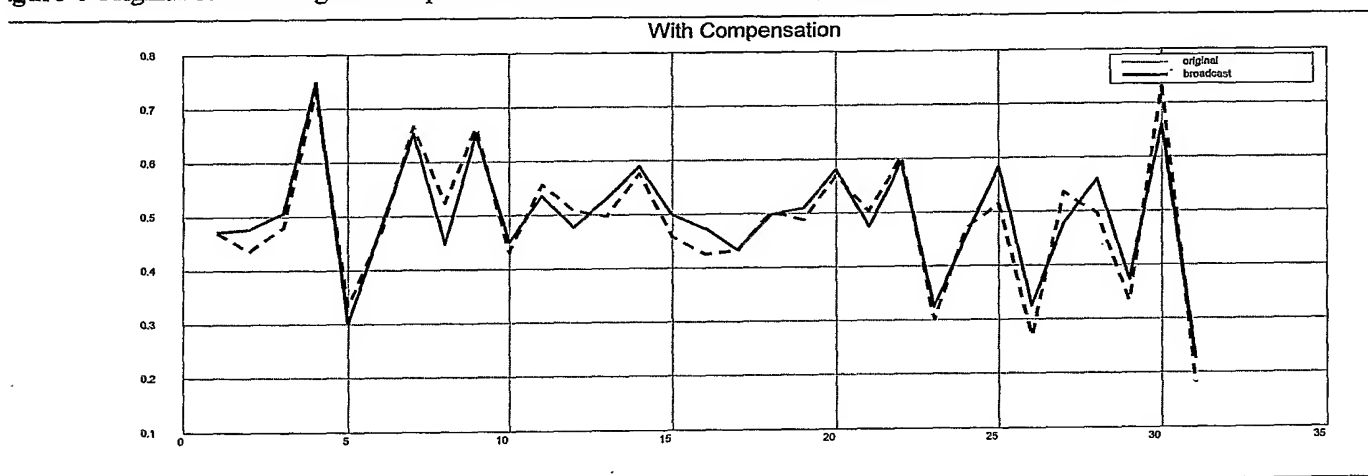
**Figure 3** The flowchart of the PG Module.

The flowchart of this module is a simple flowchart, as follows:

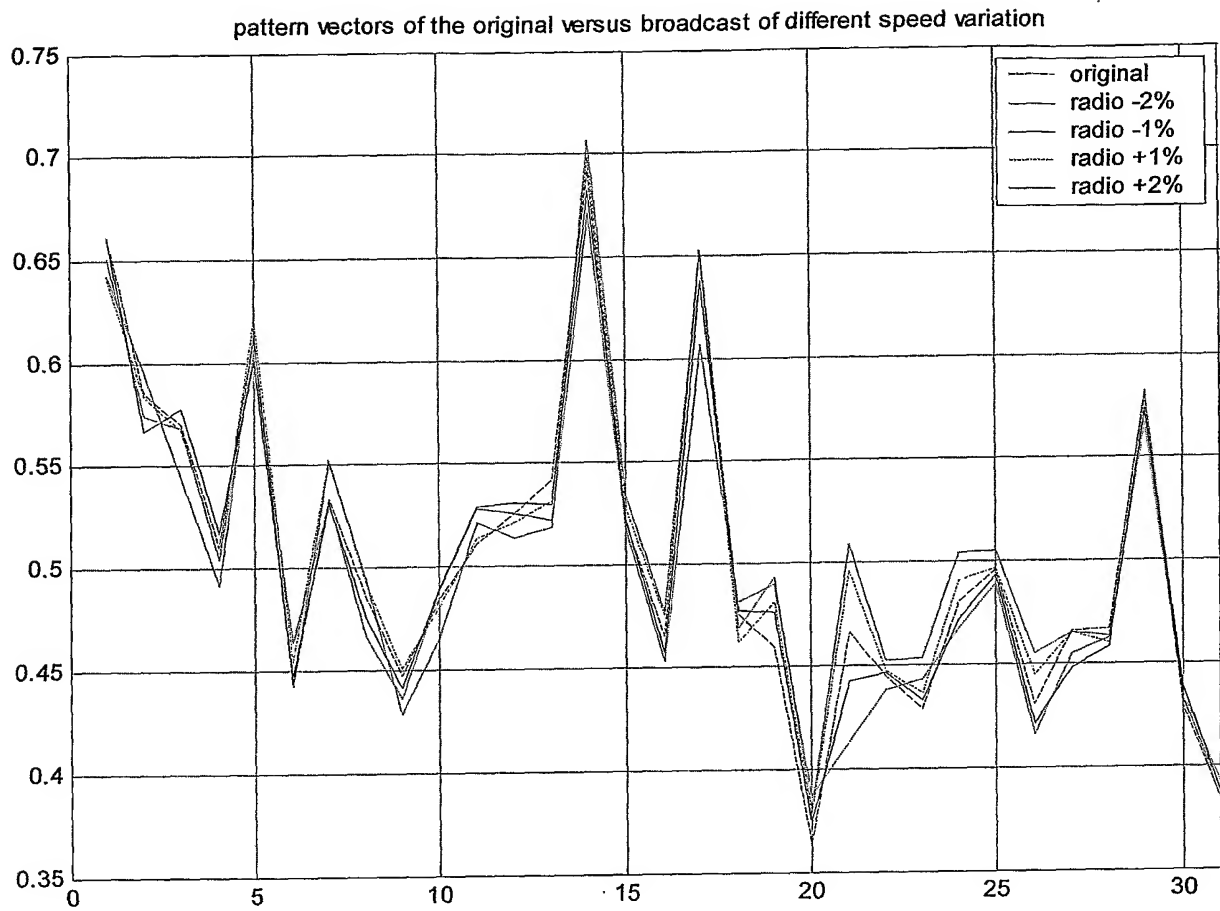




**figure 4** Original band setting leads to pattern mismatches between the original and its speedup variant.



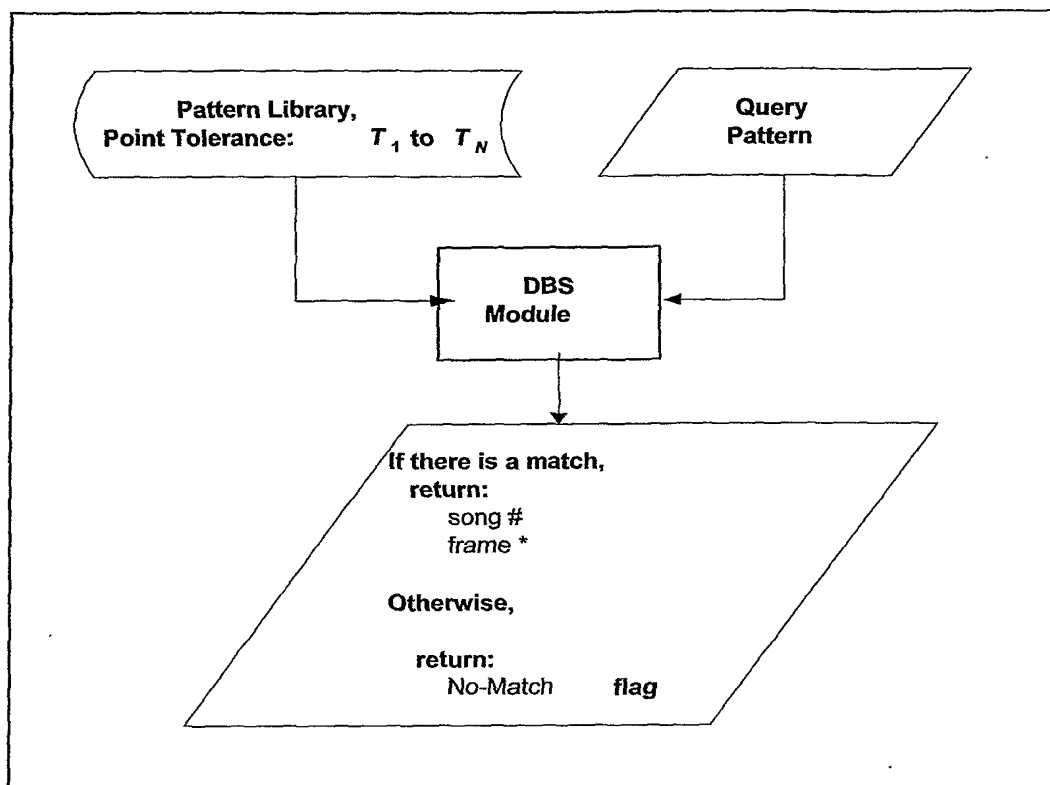
**figure 5** Modified band setting yields very good pattern matching given the speedup rate is known.



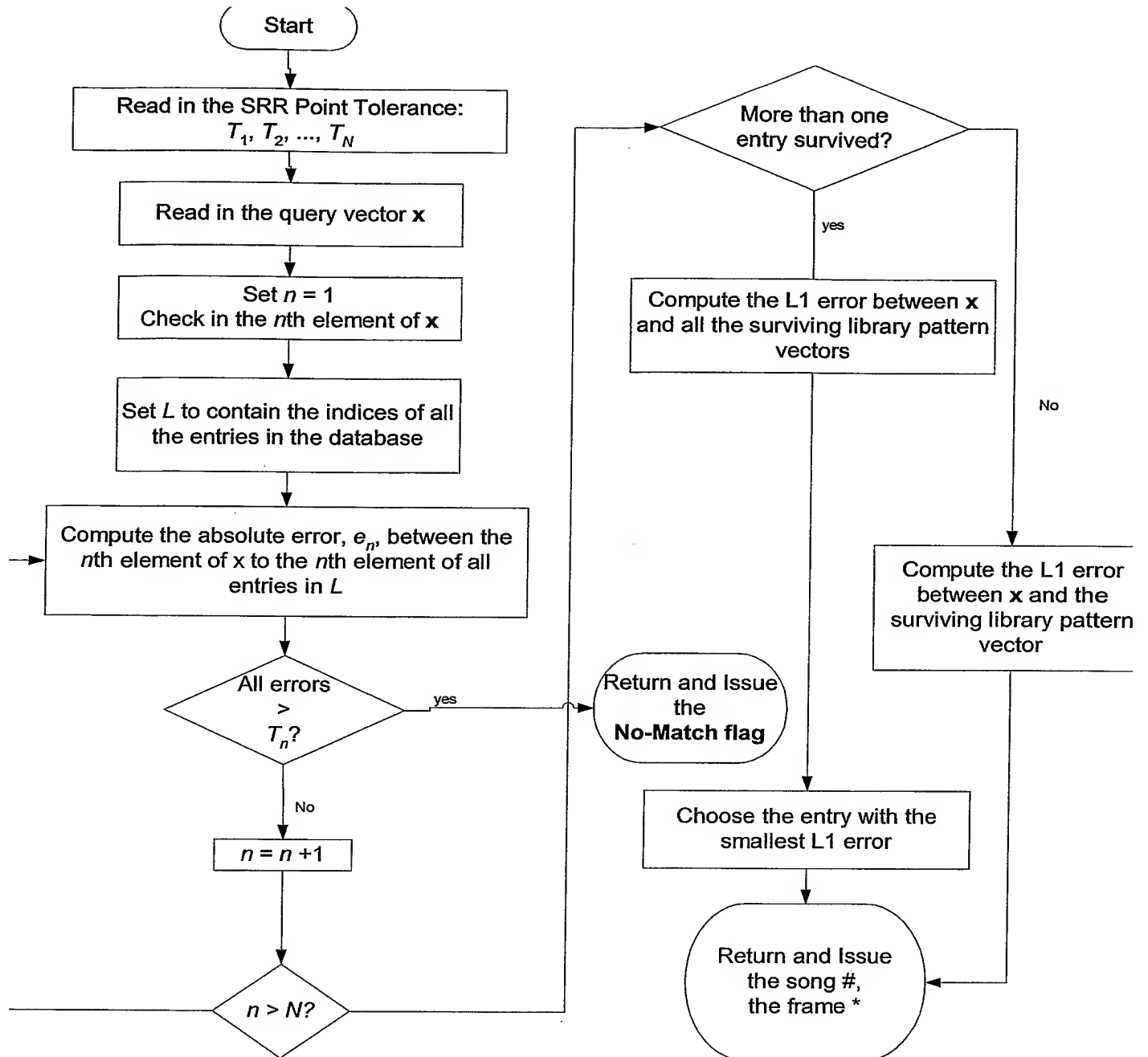
**Figure 6** The new band setting leads to good robustness of  $\pm 2\%$  speedup variations.

**Figure 7** The schematic of the DBS operation flow.

The flowchart illustrates the flow in DBS Module is given below:







No

Figure 8 The flowchart of the RS Algorithm.